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The subfamily Xestomyzinae (Diptera: Therevidae) new to Madagascar, with the description of four new species

by

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ABSTRACT

The therevid subfamily Xestomyzinae (Diptera: Therevidae) is reported for the first time for Madagascar. Four new species, *Microgephyra chrysothorax* sp. n., *M. falx* sp. n., *M. madagascariensis* sp. n., and *M. elegans* sp. n., are described. The head, antenna, wing, and male and female genitalia are illustrated for all species. An identification key and distribution maps are provided. The close phylogenetic affinity of these flies with congeners in the Afrotropical fauna is discussed, and dispersal is hypothesised as the most likely explanation for the occurrence of Therevidae in Madagascar.

KEY WORDS: Madagascar, Therevidae, Xestomyzinae, *Microgephyra,* new species, stiletto fly.

INTRODUCTION

The unique fauna of Madagascar is one of the most threatened in the world (Goodman & Benstead 2003). Characteristically some groups of Malagasy fauna underwent a prolific radiation, while other lineages, that are well represented in Africa and/or India, are completely missing or very poorly represented. Despite the diligent work by Lyneborg (1972, 1976, 1980, 1988, 1989) on the Afrotropical therevids, the fauna is not well understood, mainly because of the incomplete sampling of the huge landmass. Nonetheless, the Afrotropical Region appears depauperate in therevid species, and Madagascar appears to have considerably more species per land area than sub-Saharan Africa. Given that Madagascar, together with South Africa, is among the best collected Afrotropical countries in Africa, it is little wonder that the Madagascar therevid fauna appears diverse. However, Madagascar's therevid diversity, on a land area basis, pales in comparison with that of species-rich parts of the world such as Australia and the southwestern United States.

There have been few publications about the Therevidae fauna of Madagascar. The first therevid described from Madagascar was *Stenopomyia variegata* (Bigot, 1859) (as *Anabarhynchus* Macquart). It took more than 50 years until *Irwiniella velutina* was published by Kröber in 1912 (as *Psilocephala* Zetterstedt). Another half a century passed before Lyneborg's 1976 revision of the stiletto flies of the Ethiopian Region, in which he described 14 new species and one endemic genus for Madagascar. In that publication he placed the previously described species in a modern generic context and erected two subfamilies, the Phycinae and the Therevinae. He divided the Phycinae into two tribes, the Phycini and the Xestomyzini. The latter tribe was elevated to subfamily level (Irwin & Webb 1992). All the hitherto described species belong in two genera of the subfamily Therevinae, *Irwiniella* Lyneborg and *Stenopomyia* Lyneborg. In 1989 Lyneborg published the first records of the subfamily Phycinae and described two species in the genus *Ruppellia* Wiedemann. Irwin (2003) summarised the knowledge about Therevidae from Madagascar and mentioned two undescribed species belonging to the subfamily Xestomyzinae. These two species fit within the broad concept of *Microgephyra* Lyneborg and are not placed in a new genus as suggested in the aforementioned paper. Due to a major collecting effort initiated by E.I. Schlinger and M.E. Irwin over the past years, several new species were collected and the first four species of the subfamily Xestomyzinae were found. These four species are described in this publication.

MATERIAL AND METHODS

An individual 6-digit THEREVIDAE/M.E. IRWIN/SPECIMEN number (MEI#), was assigned and attached to each specimen (yellow label). If the specimen already had a unique identifier (collection number, etc), no MEI# was given. This unique identification number and all label information were incorporated into Mandala, a database designed to log and track individual therevid specimens (Kampmeier *et al.* 2004), for which most data are available through the internet (http://www.inhs.uiuc.edu/cee/therevid/dbtop.html).

Adult terminology follows Harris (1979) (surface structure), Irwin and Lyneborg (1981), Stuckenberg (1999) (antennal morphology), and Winterton *et al.* (1999) (female genitalia). For description of the species the holotype specimen was used. Male and female genitalia were macerated in 10% KOH overnight to remove soft tissue, rinsed in distilled water, and dissected under a Wild/Leica MZ8 binocular dissecting microscope. Female reproduction organs were stained with a saturated solution of Chlorozol Black in 75% ethanol. Preparations were kept in glycerin in a genitalia vial mounted underneath the specimen. Pictures of the preparations were captured with a digital camera and Adobe Photoshop®. Line drawings were made by the first author in Adobe Illustrator® with the help of the digital images. SEM images were taken with a Philips XL30, Field-Emission Environmental Scanning Electron Microscope (ESEM-FEG), located at the Beckman Institute for Advanced Science and Technology at the University of Illinois in Champaign-Urbana.

To conserve space and include as much information as possible about each specimen, the ‘specimens examined’ section under each species was formatted to avoid redundancy. The information about studied material contains locational data in descending order, decimal degrees of south latitude and east longitude in square brackets, altitude in meters, collecting date (day, month in roman numbers, 4-digit year), collecting method if known (Malaise trap is abbreviated as MTr), collector (when represented by an acronym, see abbreviations), number and sex of specimens followed by unique identifier (all 6-digit numbers are MEI numbers if not stated otherwise), and collection depository acronym (all specimen numbers of specimens deposited in the same collection are enclosed by the same set of parentheses). Data not repeated in a series are the same as those of preceding series. In the presentation of locality data, a semicolon terminates one series of specimens and signals the beginning of the next. Acronyms of museums and collections are given below.

ACRONYMS AND ABBREVIATIONS

Acronyms

Specimens from this study have been deposited with the following museums:

BMNH	– The Natural History Museum, London, United Kingdom.
CASC	– California Academy of Science, San Francisco, California, USA.
INHS	– Illinois Natural History Survey, Champaign, IL, USA.
MEI	– Michael E. Irwin Collection, Urbana, IL, USA.
MNHN	– Muséum National d'Histoire Naturelle, Paris, France.
NMSA	– Natal Museum, Pietermaritzburg, KwaZulu-Natal, South Africa.
SMNS	– Staatliches Museum für Naturkunde, Stuttgart, Germany.
USNM	– National Museum of Natural History, Washington DC, USA.
ZMUC	– Zoological Museum, University of Copenhagen, Copenhagen, Denmark.

Abbreviations

MI	– Michael E. Irwin	MTr	– Malaise trap
FDP	– Frank D. Parker	np	– notopleural
RHH	– Harin'Hala (Rin'ha) Rasolondalao	pa	– postalar
		pv	– posteroventral
av	– anteroventral	pd	– posterodorsal
ad	– anterodorsal	sa	– supraalar
dc	– dorsocentral	sc	– scutellar

Other abbreviations are explained in relevant figure captions.

TAXONOMY

Generic placement of the new species

The generic classification of Xestomyzinae is mainly based on Lyneborg (1972) who described five of the nine genera in this subfamily. Lyneborg (1972) discussed the characters of this subfamily in detail. The four new species from Madagascar are placed in the genus *Microgephyra* Lyneborg, 1972. Even though Lyneborg (1972: 312) stated 'The genus *Microgephyra* is most probably a paraphyletic group', he erected this genus to accommodate several South African species of Xestomyzinae which did not fit into other genera. The genus is characterised by having the apical part of the gonocoxites forming a sclerotised ring (Figs 3B, 3D, 3F, 3H; gr) and the gonostylus being in an apical position (Figs 3A–H; gs). This sclerotised ring is also present in the monotypic genus *Delphacura* Lyneborg, and in two species of the genus *Pentheria* Kröber. Although *Delphacura* and *Pentheria* have the apical tip of the gonocoxites modified, *Microgephyra* just has a simple unmodified tip.

The new species from Madagascar do not fit in any described genus of Xestomyzinae other than *Microgephyra*. We include them provisionally in *Microgephyra*, knowing that further studies might change the generic placement of these species. These four new species fall into two distinct groups: *madagascariensis* sp. n., *elegans* sp. n., and *falx* sp. n. belong to one, while *chrysothorax* sp. n. differs from them by having the male eyes holoptic and the antennae short and downward directed.

Key to the Xestomyzinae of Madagascar

1 Scape and first flagellomere subequal (Figs 2A, 2B); antennae shorter than head; wing spotted (Fig. 7A); eyes of males holoptic (Fig. 1A); thorax reddish brown with golden reflections from microsetae .... **Microgephyra chrysothorax** sp. n.

– Scape significantly shorter than first flagellomere (Figs 2C–H); antennae longer than head; wing with two dark transverse bands (Figs 7B–D) (sometimes these bands are inconspicuous, especially in males); eyes of males dichoptic (Figs 1C, 1E, 1G); thorax without golden reflections from microsetae 2

2 Thorax and pleura orange-yellow; frons without any pubescence (Figs 1E, 1F), polished black; inner margins of gonocoxites with atrium-like cavity and a pair of two thick, long macrosetae on each gonocoxite (Fig. 3E) .... **Microgephyra elegans** sp. n.

– Thorax and pleura mainly black; frons along eye margin with band of silver pubescence (Figs 1C, 1D, 1G, 1H); inner margins of gonocoxites straight, without such pairs of thick, long macrosetae 3

3 Completely black species; black transverse bands on wing very broad and dark (Fig. 7D); female frons dull, not polished, with longitudinal furrows; band of silver pubescence very narrow along eye margin (Fig. 1H); gonostylus not elongated, less than a third of the length of the gonocoxite (Fig. 3H) .... **Microgephyra madagascariensis** sp. n.

– Fore coxa and femur usually yellow-brown, pleura sometimes yellow-brown; black transverse bands on wing much fainter (Fig. 7B); female frons polished; silver pubescence along eye margin broader (Fig. 1D); gonostylus elongated, over half the length of gonocoxite (Fig. 3D) .... **Microgephyra falx** sp. n.

Characters shared by all new species

Occiput is covered with white pubescence, has single row of short, thick, black macrosetae. Notal macrosetae: np 2, sa 1, pa 1, dc 0, sc 1. Macrosetae black. Prosternal depression with some short setae. All examined *Microgephyra* species, including the four new species, lack macrosetae on femora; fore tibiae have only pv setae; middle tibiae have pv, av and ad setae; hind tibiae have av, ad, and pd setae, with small pv setae discernable in some specimens. Wing venation of all new species very similar (Figs 7A–D), while coloration and size of wings differ between species. Vein R_4 strongly curved; vein R_5, M_1 and M_2 parallel, all reaching wing margin; vein C reaching tip of M_2; cell m_3 closed, petiolated. Costal setae arranged in two parallel rows along wing margin. Sternite two divided into two sclerites. Gonocoxite pear-shaped, separated (Figs 3A–H; gc). On ventro-apical part of gonocoxite is a well defined area with spiculae of species specific shape (Figs 3A, 3C, 3E, 3G, 9A; spa), found in most Xestomyzinae. Apical part of gonocoxite with gonocoxal ring closed (Figs 3B, 3D, 3F, 3H; gr). Hypandrium free, large, with setae (Figs 3A, 3C, 3E, 3G; 3H). Aedeagus with ventral apodeme long, forked (Figs 5A–H; va); dorsal apodeme reduced (Figs 5A–H; da). At apex of aedeagus originates a membranous extension, which we term here the 'apical cap' (Figs 5A–H; ac) and which is only found so far in Xestomyzinae.

Also unique to Xestomyzinae are the lateral distiphallus sclerites (Figs 5A–H; lds). On the latero-apical portion of the distiphallus, two sclerites are visible (in cleared specimens); these are furrow-shaped and of unknown function. It is possible that these structures support and stabilise the membrane of the distiphallus and are associated with the female terminalia, in which the two spermathecal ducts (Figs 6A–D; std) originate separately, without a common duct, in the furcal membrane. The lateral distiphallus sclerites are not directly discernable in the SEM image (Fig. 9B), but they seem to be responsible for the arching of the latero-ventral part of the gonopore. Dorsal apodeme of aedeagus is always reduced (Figs 5B, 5D, 5F, 5H; da), ventral apodeme long and bifurcated (Figs 5A–H; va). The female terminalia show little variation amongst the Xestomyzinae. The furca is always open anteriorly. Spermathecal duct of the two spermathecae inserted in furca membrane without common duct. Spermathecal duct with a sclerotised ring close to the base (Figs 6A–D; sr). The duct of the spermathecal sac (Figs 6A–D; ssd) inserted at the very anterior tip in the furcal membrane. Because the spermathecal sac duct is very thin in the middle part, the spermathecal sac is often lost in dissections (Figs 6A–D; ss). Due to their fragile nature, the accessory glands are not always discernible in dissections (Figs 6A–D; ag).

Microgephyra chrysothorax sp. n.

Figs 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, 5A, 5B, 6A, 7A, 8A

Etymology: Gr. *chrysos* (gold); Gr. *thorax* (chest). Under magnification the red thorax has a golden reflection.

Diagnosis: This species is the only Xestomyzinae found in Madagascar with holoptic eyes in males (Fig. 1A). It can be distinguished from the other species by the presence of golden microsetae on the thorax. In *M. chrysothorax* the antenna is shorter than the head (Figs 2A, 2B), and points downward (Figs 2A, 2B); the scape is subequal to flagellum; the wing is spotted (Fig. 7A).

Description:

Male.

Head: Ocellar tubercle elevated, dark brown with weak golden pubescence, without setae. Eyes holoptic, reddish brown, ommatidia larger in upper half (Fig. 1A). Frons ground colour black to brown with white pubescence in upper part of frontal triangle; without setae. Parafacial white pubescent along eye margin, only lateral to antennal insertion polished brown, without setae. Genal setae sparse, brownish. Lower face densely white pubescent; comma-shaped area along tentorial pit polished black. Antenna shorter than head length, light brown with faint white pubescence. Scape 3 times longer than wide with short, brown setae. Pedicel nearly square with a few brown setae. First flagellomere oval, covered with white microsetae. Second and third flagellomeres small, square with apical stylus on third flagellomere (Fig. 2A). Maxillary palp elongate, one segmented, constricted in the apical third, pale yellow brown with white pubescence and short brown setae. Proboscis as long as head.

Thorax: Mesonotal and pleural cuticle orange-brown. Mesonotum silver-golden pubescent with sparse, short, black setae. Scutellum black pubescent. Pleural cuticle pale brown. Anepimeron and ventral part of anepisternum polished. Katepisternum, dorsal part of anepisternum and meron white pubescent. Pleuron without setae, only katatergum with a few long yellow setae and one long black seta. Wing membrane translucent yellowish-grey, completely covered with microtrichia; with irregularly brown pattern, especially around the cross veins m-cu and r-m as well as a brown band apical to the cell d and the apical tip of the wing (Fig. 7A). Pterostigma yellowish. Halter pale yellowish-brown. Coxae yellow, lightly silver pubescent. Fore coxa with 2, mid coxa with 2, hind coxa with 4 black macrosetae; hind coxa with dorso-lateral macroseta. Legs pale-brown, base of hind femur paler, covered with short black setae.

Abdomen: Cuticle dark brown dorsally, pale brown-yellowish on sternites and laterally on tergites, polished, with sparse, short, black setae. Gonocoxite with two to three black macrosetae, next to several smaller ones (Figs 3A, 4A). Inner margin of gonocoxite straight. Epandrium with apical corners only a bit folded; subepandrial sclerites with black setae on apical half (Fig. 4B). Gonostylus small, pear-shaped, pointed (Figs 3A, 3B, 4A). Hypandrium with a few brown-yellowish setae. Aedeagus with oval shaped apical cap (Figs 5A, 5B; ac). Ejaculatory apodeme in ventral view apically broadened (Fig. 5A; ea).
Body length: 4.5 mm. Wing length: 3.7 mm.

Female similar to male except as follows:

Head: Frons slightly wider than ocellar tubercle, divergent ventrally. Upper frons white to dark brown pubescent, lower frons above antenna lacking pubescence, shagreened. Eye margin with triangular white pubescent spot dorso-lateral to antenna insertion (Fig. 1B). Legs dark brown, except tip and base of femora.

Thorax: Wing membrane generally more infuscate and darker than in males.

Abdomen: Cuticle dark brown with black, erect setae, longer than in male. Sternite 8 yellowish with a row of 11–14 long, black macrosetae, each flattened at its apex and a second ventral row of 4–6 shorter, black, pointed macrosetae. Furca as in Fig. 6A.

Body length: 5.5–6.9 mm. Wing length: 4.2–4.8 mm.

Holotype (CASC type number: 18066): MADAGASCAR: *Toliara Province*: Andohaela Nat'l Park, Tsimela, Parcelle II, [24.937, 46.627], 175 m, 1–11.x.2003, MTr, MI, FDP, RHH, 1 ♂ (166260, CASC).
Paratypes: MADAGASCAR: *Toliara Province*: Andohaela Nat'l Park, Tsimela, Parcelle II, [24.937, 46.627], 175 m, 10–21.ix.2003, MTr, MI, FDP, RHH, 1♀ (166240, MEI); 1–11.x.2003, MTr, MI, FDP, RHH, 1♂ (166269, ZMUC), 1♂ (166272, NMSA); 11–21.xii.2003, MTr, MI, FDP, RHH, 1♀ (166259, MEI); 28.i–12.ii.2004, MTr, MI, FDP, RHH, 1♂ (166278, SMNS); Beza Mahafaly Reserve, [23.689, 44.596], 200 m, in spiny forest, Parcel II, 10–21.xi.2001, MTr, RHH, MI, 1♀ (146518, MEI); 9–16.i.2002, MTr, RHH, MI, 1♀ (148827, INHS); Beza Mahafaly Reserve, [23.657, 44.629], 165 m, in dry gallery forest, Parcel I, 21–28.xi.2001, MTr, RHH, MI, 1♀ (146512, MEI); 28.xi–4.xii.2001, MTr, RHH, MI, 1♀ (148825, BMNH); 2–9.i.2002, MTr, RHH, MI, 1♀ (138466, MNHN); Beza Mahafaly Reserve, near Bellevue, [23.687, 44.591], 200 m, in spiny forest, 2–9.i.2002, MTr, RHH, MI, 1♀ (148826, CASC); Cap Ste Marie Special Reserve, 7 km S ANGAP office, [25.588, 45.163], 40 m, vegetated dunes nr coast, 9–15.xii.2002, MTr, RHH, MI, 1♂ (146484, MEI).

Biology: This species was collected from September to February in Malaise traps in dry forest, gallery forest, deciduous forest, and spiny forest, as well as on coastal dunes with vegetation.

Microgephyra falx sp. n.

Figs 1C, 1D, 2C, 2D, 3C, 3D, 4C, 4D, 5C, 5D, 6B, 7B, 8B, 9A

Etymology: L. *falx* (sickle). The gonostyli are unusually long and sickle-shaped.

Diagnosis: This species is characterised by the dichoptic male eyes (character shared with *elegans* and *madagascariensis*), the polished black frons with a silver pubescent band along eye margin in the female (Fig. 1D), the brown to yellow fore coxa and femur, the dark brown thorax, the faint transverse bands on the wing and the long sickle-shaped gonostyli (Figs 3D, 4C).

Description:

Male.

Head: Ocellar tubercle slightly elevated, polished black, with a few setae, which are as long as diameter of ocellus. Eyes brown, dichoptic, separated by width of ocellar tubercle (Fig. 1C), ommatidia homogeneous in size. Frons diverging ventrally; polished black, with band of silver pubescence along inner eye margin, starting in lower half of frons and connecting with thin band with pubescence of occiput (Fig. 1C). Parafacial and lower face silver pubescent; without setae. Genal setae sparse, light brown to white. Antenna about twice as long as head, brown (Fig. 2C). Scape nearly twice as long as wide, with short, thick, black setae on ventral side. Pedicel very short, twice as broad as long with few short, black setae. First flagellomere 5.5 times as long as broad, laterally flattened. Second and third flagellomeres very small. Second flagellomere shorter than broad, third flagellomere twice as long as broad, with apical stylus. Maxillary palp elongate, one segmented, constricted in middle, yellow, with short yellow appressed setae. Proboscis medium sized, as long as head.

Thorax: Mesonotal cuticle brown. Mesonotum with three silver pubescent vittae, central vittae smaller and fainter than lateral ones, which merge posteriorly and reach base of scutellum. Scutellar cuticle brown with basal patch of silver pubescence. Pleural cuticle pale brown, sometimes yellowish-brown. Pleuron covered with silver pubescence, except anepisternum only pubescent in central part and anepimeron only pubescent in ventral part. Pleuron without setae. Wing membrane translucent brownish-grey, darker apical to cell d, especially along veins, darker also around cross veins m-cu and r-m. This creates the impression of two faint bands (Fig. 7B). Veins black. Completely covered with microtrichia except apical part of cell cu-p. Pterostigma black. Halter stalk yellow, head brown. Coxae pale yellow, hind coxa lightly silver pubescent. Fore coxa with 2, mid coxa with 2, hind coxa with 3 black macrosetae; hind coxa with dorso-lateral macroseta. All femora and basal half of fore and mid tibiae light yellow, apical part of fore and mid tibiae and complete hind tibia brown; tarsi black, only basitarsus yellowish at base.

Abdomen: Cuticle black, polished with short, appressed, black setae. Gonocoxite with many black setae laterally (Figs 3C, 4C). Inner margin of gonocoxite straight. Epandrium with corners folded inwards over nearly a third of width of epandrium; subepandrial sclerite with setae only in the most apical part (Fig. 4D). Gonostylus long, sickle shape, crossing at middle of gonocoxites. Hypandrium laterally with about 8 setae (Fig. 5C). Aedeagus with bilobed apical cap (Figs 5C, 5D). Ejaculatory apodeme in ventral view apically broadened (Fig. 5C).

Body length: 6.2 (5.8–7) mm. Wing length: 4.6 (4.2–5.2) mm.

Female similar to male except as follows:

Head: Antenna nearly twice as long as head. Scape twice as long as broad. First flagellomere 6.5 times as long as broad, thinner than in male. Maxillary palp longer and broader than in male, club-like expanded apex, but not two segmented (Fig. 2D).

Thorax: Wing. Brown coloration is more intense in female. Coxae dark yellow to brown, darker than in male. Fore tibia and femur light brown, sometimes yellowish, middle and hind tibiae and femora dark brown to black.

Abdomen: Sternite 8 red-brown, setae reddish-orange. Two irregular rows of black or sometimes reddish-orange, apical flattened macrosetae. Upper row consists of 10–14 macrosetae, while second row has 8–16 shorter, pointed macrosetae. Furca as in Fig. 6B.

Body length: 7.2–8.8 mm. Wing length: 5.2–7.5 mm.

Holotype (CASC type number: 18071): MADAGASCAR: *Toliara Province*: 15.5 km 64 deg ENE Marofandilia, Forêt de Kirindy, [20.04, 44.657], 100 m, in tropical dry forest, 28.xi–3.xii.2001, MTr, B.L. Fisher, C. Griswold, 1♂ (149897, CASC).

Paratypes: MADAGASCAR: *Toliara Province*: 15.5 km 64 deg ENE Marofandilia, Forêt de Kirindy, [20.04, 44.657], 100 m, in tropical dry forest, 28.xi–3.xii.2001, MTr, B.L. Fisher, C. Griswold, 12♂ (149896, 149898, 149899, 149900, 149902, 149903, 149904, 149905, 149906, 149907, 146510, 146511, MEI), 15♂ (149881, 149882, 149883, 149884, 149885, 149886, 149888, 149889, 149890, 149891, 149892, 149893, 149894, 149895, 157872, CASC), 1♂ (149887, INHS); 4♀ (149909, 149910, 149911, MEI), 1♀ (146509, INHS); Andohaela National Park, Tsimelahy, Parcelle II, [24.937, 46.627], 175 m, transitional forest, 19–26.xi.2002, MTr, MI, FDP, RHH, 1♂ (166266, MEI) 2♀ (166263, 166277, MEI); 9–16.xii.2002, MTr, MI, FDP, RHH, 2♂ (166270, 166271, MEI); 21–25.x.2002, MTr, MI, FDP, RHH, 3♂ (153248, MNHN), (153250, MEI), (153249, NMSA); 25.x–4.xi.2002, MTr, MI, FDP, RHH, 2♂ (154273, 154277, MEI), 3♀ (154279, MNHN), (154280, 154287, MEI); 4–11.xi.2002, MTr, MI, FDP, RHH, 3♂ (154262, 154271, 154278, MEI), 3♀ (154282, 154283, 154286, MEI), 11–19.xi.2002, MTr, MI, FDP, RHH, 1♀ (154281, MEI); 19–26.xi.2002, MTr, MI, FDP, RHH, 1♂ (157871, MEI); 26.xi–2.xii.2002, MTr, MI, FDP, RHH, 2♂ (154264, 154269, MEI), 2♀ (154284, 154285, MEI); 2–9.xii.2002, MTr, MI, FDP, RHH, 1♂ (154274, MEI), 2♀ (154293, 154297, MEI); 9–16.xii.2002, MTr, MI, FDP, RHH, 6♀ (154288, 154289, 154290, 154294, 154295, 154296, MEI); 17–24.viii.2003, MTr, MI, FDP, RHH, 1♂ (166281, MEI); 1–11.x.2003, MTr, MI, FDP, RHH, 1♂ (166268, MEI); 30.x–9.xi.2003, MTr, MI, FDP, RHH, 2♂ (166273, 166279, MEI); 21–23.xii.2003, MTr, MI, FDP, RHH, 1♂ (166262, MEI); 27.xii.2002–6.i.2003, MTr, MI, FDP, RHH, 3♂ (153242, USNM), (153243, 153244, MEI); 6–16.i.2003, MTr, MI, FDP, RHH, 2♂ (153245, MEI), (153247, ZMUC), 2♀ (153206, 153208, MEI); 28.i–12.ii.2004, MTr, MI, FDP, RHH, 1♂ (166282, MEI); 26.ii–8.iii.2003, MTr, MI, FDP, RHH, 1♀ (153207, MEI); 8–18.iii.2003, MTr, MI, FDP, RHH, 2♀ (153200, 153203, MEI); Andohaela National Park, Tsimelahy, [24.937, 46.627], 190 m, in transition forest, Parcel II, 16–26.i.2003, MTr, RHH, MI, 1♂ (146495, MEI) 1♀ (146496, MEI); Berenty Special Reserve, 8 km NW Amboasary, [25.007, 46.303], 85 m, in gallery forest, 25–26.x.2002, MTr, MI, FDP, RHH, 2♂ (153213, 153240, MEI), 3♀ (153199, 153204, 153205, MEI); 26.x–5.xi.2002, MTr, MI, FDP, RHH, 2♂ (154265, 154268, MEI); 9–16.xi.2002, MTr, MI, FDP, RHH, 4♂ (153233, 153241, 153246, MEI), (153234, SMNS), 3♀ (153201, 153209, 153210, MEI); 16–23.xi.2002, MTr, MI, FDP, RHH, 1♂ (154263, MEI), 1♀ (154291, MEI); 23–30.xi.2002, MTr, MI, FDP, RHH, 3♂ (154266, 154267, 154270, MEI), 1♀ (154292, MEI); 30.xi–7.xii.2002, MTr, RHH, MI, 1♂ (146494, MEI); 7–14.xii.2002, MTr, MI, FDP, RHH, 4♂ (153236, 153237, 153238, 153239, MEI), 1♀ (153211, MEI); 16.x–27.xii.2002, MTr, RHH, MI, 1♂ (153235, MEI) 3♀ (153197, 153198, 153202, MEI); 26.i–5.ii.2003, MTr, RHH, MI, 1♂ (153251, MEI) 1♀ (153212, MEI); 5–15.ii.2003, MTr, RHH, MI, 1♂ (153223, 153224, 153225, MEI); Zombitse National Park, [22.783, 45.033], 825 m, in dry gallery forest, 5–12.i.2002, MTr, RHH, MI, 1♂, (148272, MEI); 21–28.ii.2002, MTr, RHH, MI, 4♂ (1428232, 148233, 148241, 148242, MEI); 28.ii–6.iii.2002, MTr, RHH, MI, 9♂ (148251, 148252, 148253, 148256, 148257, 148258, 148259, 148260, 148261, MEI); 6–13.iii.2002, MTr, MI, RHH, 8♂ (146515, 146516, 148237, 148238, 148239, 148240, 148255, 148264, MEI); 20–27.iii.2002, MTr, MI, RHH, 5♂ (148245, 148246, 148248, 148249, 148263, MEI); 11–16.iv.2002, MTr, MI, FDP, RHH, 1♀ (146505, MEI); 16–23.iv.2002, MTr, MI, RHH, 3♂ (148222, 148223, 148224, MEI); 1–9.v.2002, MTr, RHH, MI, 1♂ (148244, MEI); 13–25.vii.2002, MTr, RHH, MI, 1♂, (148273, MEI); 25.vii–1.viii.2002, MTr, RHH, MI, 1♂ (148271, MEI); 1–14.viii.2002, MTr, MI, RHH, 8♂ (146506, 146517, 148231, 148234, 148235, 148236, 148254, 148275, MEI); 14–25.viii.2002, MTr, MI, RHH, 5♂ (148227, 148228, 148229, 148230, 148250, MEI); 25.viii–3.ix.2002, MTr, RHH, MI, 4♂ (148225, 148226, 148243, 148262, MEI); 5–31.x.2002, MTr, MI, FDP, RHH, 49♂ (146507, 146508, 148265, 148266, 148267, 148268, 148269, 148270, 148274, 148276, 148277, 148278, 148279, 148280, 148281, 148282, 148283, 148284, 148285, 148286, 148287, 148288, 148289, 148290, 148291, 148292, 148293, 148294, 148295, 148296, 148297, 148298, 148299, 148300, 148301, 148302, 148303, 148304, 148305, 148306, 148307, 148308, 148835, 148836, 148837, 148838, 148839, 148841, 148842, MEI) 2♀ (146513, 148834, MEI), 1♀ (148840, BMNH); 16–31.x.2002, MTr, MI, FDP, RHH, 6♂ (146498, 146499, 146500, 146501, 146502, 157873, MEI); Zombitse National Park, near main road, [22.841, 44.731], 825 m, in deciduous spiny forest, 23.iv–1.v.2002, MTr, RHH, MI, 4♂ (157869, 157870, 153226, 153231, MEI); Zombitse National Park, near road, [22.841, 44.731], 822 m, 15.x–9.xi.2001, MTr, RHH, 1♂ (166449, MEI); 19–26.xi.2001, MTr, RHH, 1♂ (BAT 120, MEI); 26.xi–2.xii.2001, MTr, RHH, 1♂ (BAT 143, MEI); 2–7.xii.2001, MTr, RHH, 1♂ (BAT 150, MEI); 16–22.xii.2001, MTr, RHH, 1♂ (BAT 140, MEI); 22–29.xii.2001, MTr, RHH, 1♂ (166443, MEI); 5–12.i.2002, MTr, RHH, 1♂ (166456, MEI); 21–28.ii.2002, MTr, RHH, 1♂ (166444, MEI); 11–16.iv.2002, MTr, RHH, 1♂ (BAT 122, MEI); 1–9.v.2002, MTr, RHH, 6♂ (BAT 138, 166251, 166252, 166253, 166256, 166257, MEI); 2–13.vii.2002, MTr, RHH, 1♂ (BAT 151, MEI); 25.vii–1.viii.2002, MTr, RHH, 1♂ (BAT 125, MEI); 1–14.viii.2002, MTr, RHH, 1♂ (BAT 157, MEI); 14–25.viii.2005, MTr, RHH, 1♂ (166461, MEI); Zombitse National Park, nr ANGAP Office, [22.887, 44.692], 838 m, 9–19.xi.2001, MTr, RHH, 2♂ (BAT 141, 146, MEI); 19–26.xi.2001, MTr, RHH, 1♂ (166454, MEI); 22–29.xii.2001, MTr, RHH, 1♂ (166460, MEI); 12–19.i.2002, MTr, RHH, 1♂ (166457, MEI); 19–26.i.2002, MTr, RHH, 1♂ (BAT 126, MEI); 26.i–5.ii.2002, MTr, RHH, 1♂ (BAT 153, MEI); 5–14.ii.2002, MTr, RHH, 1♂ (BAT 145, MEI); 14–21.ii.2002, MTr, RHH, 1♂ (BAT 119, MEI); 20–27.iii.2002, MTr, RHH, 1♂ (148247, MEI); 27.iii–3.iv.2002, MTr, RHH, 1♀ (BAT 123, MEI); 11–16.iv.2002, MTr, RHH, 1♂ (165118, MEI); 16–23.iv.2002, MTr, RHH, 1♂ (BAT 127, MEI); 1–9.v.2002, MTr, RHH, 1♂ (BAT 134, MEI); 9–18.v.2002, MTr, RHH, 1♂ (166445, MEI); 19–27.v.2002, MTr, RHH, 1♂ (BAT 130, MEI); 12–23.vi.2002, MTr, RHH, 1♂ (BAT 128, MEI); 23.vi–2.vii.2002, MTr, RHH, 1♂ (166451, MEI); 3–13.vii.2002, MTr, RHH, 1♂ (BAT 155, MEI); 5–31.x.2002, MTr, RHH, 1♂, (BAT 154, MEI); 31.x–16.xi.2002, MTr, RHH, 1♂ (BAT 147, MEI); 16–29.xi.2002, MTr, RHH, 1♂ (BAT 136, MEI); Zombitse National Park, nr ANGAP Office, [22.887, 44.692], 840 m, in deciduous spiny forest, 29.xi–11.xii.2002, MTr, RHH, MI, 3♂ (154272, 154275, 154276, MEI); 11–22.xii.2002, MTr, RHH, MI, 3♂ (153215, 153216, 153217, MEI); 4–20.i.2003, MTr, RHH, 1♂ (BAT 121, MEI); 13–19.ii.2003, MTr, RHH, MI, 3♂ (153218, 153219, 153220, MEI); 10–19.iii.2003, MTr, RHH, MI, 5♂ (153221, 153222, 153227, 153228, 153230, MEI); 19–29.iii.2003, MTr, RHH, MI, 3♂ (153214, 153229, 153232, MEI); Zombitse Nature Reserve, 16 km E Sakaraha, [22.882, 44.701], 825 m, in tropical forest on sand, 13–16.xii.1999, MTr, MI, E.I. Schlinger, 1♀ (122886, MEI); Andohaela Nat'l Park, Tsimela, Parcelle II, [24.937, 46.627], 176 m, 25.x–4.xi.2002, MTr, MI, RHH, 1♂ (165115, MEI), 1♀ (165116, MEI); 17–19.xi.2002, MTr, MI, RHH, 1♀ (165109, MEI); 2–9.xii.2002, MTr, MI, RHH, 1♂ (BAT 133, MEI); 17–27.xii.2002, MTr, MI, RHH, 1♂ (165124, MEI); 20–30.xii.2002, MTr, MI, RHH, 1♂ (165125, MEI); 26.i–5.ii.2003, MTr, MI, RHH, 1♂ (165122, MEI); 15–22.vi.2003, MTr, MI, RHH, 3♂ (166248, 166249, 166250, MEI) 1♀ (166245, MEI); 10–20.vii.2003, MTr, MI, RHH, 4♂ (BAT 129, 166254, 166255, 166258, MEI) 1♀ (166246, MEI).

Biology: This species has been collected year round in Malaise traps in deciduous forest, dry forest, gallery forest, transitional forest, tropical forest, and in spiny forest.

Microgephyra elegans sp. n.

Figs 1E, 1F, 2E, 2F, 3E, 3F, 4E, 4F, 5E, 5F, 6C, 7C, 8C, 9B

Etymology: L. *elegans* (fine, graceful). Named in reference to its long antennae and delicate body.

Diagnosis: This species is recognised by its red-orange thorax and extremely long antennae, which can be several times the length of the head in the male (Figs 2E, 2F).

Description:

Male.

Head: Ocellar tubercle polished greyish-black, with a few short, black setae. Eyes dichoptic, separated by distance greater than width of ocellar tubercle, ommatidia homogeneous (Fig. 1E). Frons cuticle color greyish-black dorsally, lower frons brown, lacking setae or pubescence (Fig. 1E). Parafacial white pubescent, lacking setae. Genal setae sparse, brownish-black. Lower face dense, white pubescent. Antenna four times longer than head, orange-brown. Scape nearly twice as long as wide with short, black setae overall and some longer setae on ventral apical end. Pedicel nearly square with few black setae. First flagellomere 14 times as long as wide, covered with microsetae bent towards apical tip of antenna. Second flagellomere very small, square with stylus (Fig. 2E). Maxillary palp brown, constricted in middle with long, erect setae on basal half, short, appressed, brown setae in apical half. Proboscis as long as head.

Thorax: Mesonotal and pleural cuticle orange-brown, polished without any pubescence, except faint silver pubescence on scutellum, metanepisternum and anatergite. Mesonotum with sparse, short, black setae, and two brown vittae laterally enlarged towards humeral callus, disappearing towards scutellum. Katepisternum and katatergum with sparse, black setae. Wing membrane translucent brownish-grey, covered with microtrichia except the baso-apical part of cell cu-p; two dark bands (Fig. 7C). Pterostigma black. Halter dark brown. Coxae and femora light orange brown, hind coxa with small, brown, apical spot. Fore and hind tibia brown, basally orange, mid tibia orange. Tarsi dark brown, hind basitarsus yellowish. Hind coxa with intense silver pubescence. Coxae with two black macrosetae; hind coxa lacking dorso-lateral macroseta but with hair-like, black setae laterally.

Abdomen: Cuticle dark brown, contrasting to orange thorax, polished, with sparse, short, black setae. Gonocoxite with two long black macrosetae laterally (Figs 3E, 4E). Inner margin of gonocoxite with atrium-like cavity. Epandrium with corners folded inwards over nearly a third of width of epandrium and with row of setae on this part; subepandrial sclerite with setae only in most apical part (Fig. 4F). Gonostylus elongate and thin, and curved apically (Figs 3E, 3F, 4E). Hypandrium with about 20 black macrosetae. Aedeagus with apical cap broadly bilobed (Figs 5E, 5F). Ejaculatory apodeme not broadened apically (Fig. 5E).

Body length: 6.3 (5.4–6.4) mm. Wing length: 5.4 (4.7–5.4) mm.

Female similar to male except as follows:

Head: Antenna 2.5 times longer than head, orange-brown (Fig. 2F). First flagellomere 10 times longer than wide, covered with microsetae bent towards apical tip of antenna. Wing membrane generally more infuscate and darker than in males.

Abdomen: Sternite 8 dark brown with a row of 10–12 and a row of 10 long, dark brown macrosetae. Furca as in Fig. 6C.

Body length: 6.5–8.5 mm. Wing length: 5.1–6.5 mm.

Holotype (CASC type number: 18070): MADAGASCAR: *Toliara Province*: Andohaela National Park, Tsimela, [24.937, 46.627], 175 m, in transitional forest, Parcel II, 19–26.iv.2003, MTr, MI, FDP, RHH, 1♂, (153174, CASC).

Paratypes: MADAGASCAR: *Toliara Province*: Parc National d'Andohahela, 23.5 km 63 deg ENE Amboasary 7.6 km 99 deg E Hazofotsy, Forêt de Manantalinjo, [24.817, 46.61], 150 m, in spiny forest thicket, 12–16.i.2002, MTr, Fisher, Griswold *et al.*, 1♂ (146490, MEI); Andohaela National Park, Tsimela, Parcelle II, [24.937, 46.627], 175 m, transitional forest, 6–16.i.2003, MTr, MI, FDP, RHH, 1♂ (166265, MEI); 15–26.ii.2003, MTr, MI, FDP, RHH, 1♂ (166264, MEI); 26.ii–8.iii.2003, MTr, MI, FDP, RHH, 1♂ (166267, MNHN); 8–18.iii.2003, MTr, MI, FDP, RHH, 1♂ (166310, MEI); 28.iii–8.iv.2003, MTr, MI, FDP, RHH, 3♂ (166276, 166283, 166303, MEI); 28.i–12.ii.2004, MTr, MI, FDP, RHH, 2♂ (166261, 166301, MEI), 1♀ (166274, MNHN); 12–23.ii.2004, MTr, MI, FDP, RHH, 1♀ (166275, MEI); Andohaela National Park, 1 km S Ihazofotsy, [24.831, 46.536], 62 m, in spiny forest, Parcel III, 13–20.v.2003, MTr, RHH, MI, 4♂ (146485, 146486, 146488, 146489,MEI), 1♀ (146487, MEI); Andohaela National Park, Tsimela, [24.937, 46.627], 175 m, in transitional forest, Parcel II, 19–26.iv.2003, MTr, MI, FDP, RHH, 15♂ (153155, NMSA), (153160, USNM), (153156, 153159, 153162, 153170, 153171, 153172, 153180, 153181, 153182, 153183, 153184, 153185, MEI), (153161, BMNH), 3♀ (153186, 153187, 153196, MEI); 1–26.iv.2003, MTr, RHH, MI, 1♂ (146504, MEI), 1♀ (146503, MEI); 26.iv–3.v.2003, MTr, MI, RHH, 2♂ (153163, 153167, MEI), 7♀ (153189, INHS), (153190, NMSA), (153193, ZMUC), (153191, 153192, 153194, 153195, MEI); 31.v.2003, MTr, RHH, MI, 2♂ (153178, MEI), (153179, SMNS), 1♀ (153188, MEI); Berenty Special Reserve, [25.007, 46.303], 36 m, in gallery forest, 23–30.xi.2002, MTr, MI, FDP, RHH, 1♂ (166284, MEI); 30.xi–7.xii.2003, MTr, MI, RHH, 1♂ (166280, MEI); 8–15.xi.2002, MTr, RHH, 1♂ (165114, MEI), 1♀ (165105, MEI); 16–23.xi.2002, MTr, MI, RHH, 1♂ (165128, MEI), 1♀ (165107, MEI); 23–30.xi.2002, MTr, MI, RHH, 1♂ (165102, MEI); 17–26.i.2003, MTr, MI, RHH,♂ (165112, MEI); Andohaela National Park, Tsimela, Parcelle II, [24.937, 46.627], 176 m, 26.i–5.ii.2003, MTr, MI, RHH, 2♂ (165104, INHS), (166406, MEI); 26.xi–2.xii.2003, MTr, MI, RHH, 1♂ (165103, MEI); 11–21.xii.2003, MTr, MI, RHH, 1♂ (166244, MEI).

Biology: This species has been collected from November to May in Malaise traps in spiny forest and in transitional forest.

Microgephyra madagascariensis sp. n.

Figs 1G, 1H, 2G, 2H, 3G, 3H, 4G, 4H, 5G, 5H, 6D, 7D, 8D

Etymology: The species is named after the island of Madagascar.

Diagnosis: This species is the biggest and darkest of all the known Xestomyzinae in Madagascar. It can be distinguished by the broad, black, transverse bands on the wing (Fig. 7D), the completely black body and legs, the dull female frons with very narrow silver pubescent bands along eye margin (Fig. 1H) and the male terminalia (Figs 3G, 3H).

Description:

Male.

Head: Ocellar tubercle polished black with sparse short, black setae. Eyes dichoptic, separated by width of ocellar tubercle, ommatidia homogeneous (Fig. 1G). Frons cuticle black with narrow band of silver pubescence along inner eye margin, with few black setae, as long as diameter of ocellus. Lower frons lacking pubescence, dull because of longitudinal striations. Parafacial white pubescent, without setae. Gena with sparse, brownish setae. Lower face densely white pubescent. Antenna slightly longer than head, black with faint white pubescence. Scape twice as long as broad with short, black setae. Pedicel brown, nearly square with few black setae. First flagellomere four times longer than wide, covered with white microsetae. Second and third flagellomere small, square with stylus (Fig. 2G). Maxillary palp black, long, constricted in middle, with many appressed, brown setae. Proboscis as long as head.

Thorax: Mesonotal and pleural cuticle black to dark brown. Mesonotum, scutellum and pleuron weakly silver pubescent. Mesonotum with sparse, short, black setae. Pleuron lacking setae, katatergum with few long, yellow and black setae. Wing membrane translucent brownish-grey, covered with microtrichia except apical part of cell cu-p; two dark bands. Pterostigma black. Halter dark brown. Legs dark brown to black, light silver pubescent. Hind coxa with intense silver pubescence. Fore coxa with one, mid and hind coxa with two black macrosetae; hind coxa with dorso-lateral macroseta.

Abdomen: Cuticle dark brown to black, polished, with sparse, short, black setae. Gonocoxite with many black setae laterally (Figs 3G, 4G). Epandrium with corners folded inwards over nearly a third of width of epandrium; subepandrial sclerite with setae only in most apical part (Fig. 4H). Gonostylus spoon-like with pointed lateral extension (Figs 3G, 3H, 4G). Inner margin of gonocoxite straight. Hypandrium with four setae (Fig. 3G). Aedeagus with apical cap broad, slightly notched (Fig. 5G, 5H). Ejaculatory apodeme in ventral view apically broadened (Fig. 5G).

Body length: 8 mm. Wing length: 5.7 mm.

Female similar to male except as follows:

Head: Frons lacking silver pubescence beneath frontal ocellus. Maxillary palp broader apically than in male (Fig. 2H).

Thorax: Wing membrane generally more infuscate and darker than in male (Fig. 7D).

Abdomen: Sternite 8 black with 15 long, dark brown, irregularly arranged macrosetae. Furca as in Fig. 6D.

Body length: 9.5–10 mm. Wing length: 7.8–8 mm.

Holotype (CASC type number: 18072): MADAGASCAR: *Tamatave Province*: Andasibe, Reserve Speciale Analamazaotra, [18.931, 48.418], 940 m, 7.xi–16.xii.2001, MTr, RHH, MI, 1♂ (149908, CASC).

Paratypes: MADAGASCAR: *Andoranomay Province*: 11.5 km SE Anjozorobe, [18.473, 47.96], 1300 m, 5–15.xii.2000, hand netted, B.M. Fisher, 1♀ (125620, ZMUC), 1♀ (146519, MEI); *Antanarivo Province*: Ambohitantely Forest Reserve, 46 km NE Ankazobe, [18.198, 47.282], 700 m, 17.x–24.x.2003, MTr, RHH, Rambeloson, 2♀ (165106, MNHN), (165111, MEI); 7–15.xi.2003, MTr, RHH, Rambeloson, 1♀ (165123, MEI); 15–22.xi.2003, MTr, MI, RHH, 2♀ (166242, 166243, MEI); 20–28.xii.2003, MTr, RHH, Rambeloson, 3♀ (165100, 167198, 167199, MEI); 28.xii.2003–10.i.2004, MTr, MI, RHH, 1♀ (166241, MEI); 20.i–1.ii.2004, MTr, MI, RHH, 1♀ (166239, MEI); 5–19.iii.2004, MTr, MI, RHH, 1♀ (166247, MEI); *Tamatave Province*: Andasibe, Reserve Speciale Analamazaotra, [18.931, 48.418], 940 m, 24.xii.2001–10.i.2002, RHH, MI, 1♀ (148829, INHS); 10–21.i.2002, MTr, RHH, MI, 1♀ (148828, USNM); 16–27.ix.2002, MTr, RHH, MI, 1♀ (148830, SMNS); 7 km SE Andasibe National Park, [18.961, 48.45], 920 m, in rainforest, 22.i–9.iii.2001, MTr, RHH, MI, 1♀ (154298, MEI); *Toamasina Province*: Parc Nacional Andasibe (Perinet), 19 km E Moramanga, [18.933, 48.371], 1000 m, in forest, 5–14.xii.1999, MTr, MI, E.I. Schlinger, 3♀ (122883, CASC), (122884, NMSA), (124398, MEI); 5.xii.1999, MI, E.I. Schlinger, RHH, 1♀ (122885, BMNH);

Biology: This species has been collected from October to March in Malaise traps in the rainforest.

DISCUSSION

The Therevidae fauna of Madagascar is more speciose per unit area than sub-Saharan Africa and harbours all three subfamilies which are also present in Africa: Xestomyzinae (*Microgephyra*, four species), Phycinae (*Ruppellia*, two described, four undescribed species) and Therevinae (*Stenopomyia*, thirteen described, two undescribed; *Irwiniella*, three described). Specimens of an undescribed Therevinae genus close to *Stenopomyia* are on hand. Irwin (2003) proposed a Jurassic origin of the family Therevidae and postulated the process of vicariance for the occurrence of Therevidae on Madagascar. Africa separated from Madagascar/India about 160 million years ago (De Wit 2003) suggesting that the Therevidae in Madagascar would have been isolated from the African continent for at least this amount of time. Divergence time estimates (Hauser unpublished data from two different genes, 28S and EF1-alpha combined) point to a more recent origin of the Therevidae groups found in Madagascar. For instance, the divergence estimate analyses suggest that the last common ancestor between the South African *Microgephyra brincki* Lyneborg and *M. madagascariensis* sp. n., is no more than 40 million years old. The radiation of the genus *Ruppellia* was, according to these data, around 20 million years ago. These dates reject the vicariance hypothesis and make dispersal the more likely mechanism for the occurrence of Therevidae in Madagascar.

It is likely that *M. madagascariensis*, *M. elegans* and *M. falx* form a monophyletic group and are not closely related to *M. chrysothorax*. But the unresolved phylogeny of this genus of Xestomyzinae does not allow more comprehensive conclusions at this point in time. The genus *Ruppellia* is only found in North Africa, from Morocco to Egypt and Israel along the desert regions towards central Asia. No species of *Ruppellia* have been found in sub-Saharan Africa, so its presence in Madagascar is notable. The supposed occurrences of sub-Saharan *Ruppellia* published in Irwin (2003) and Lyneborg (1983) are based on earlier classification of this and related genera. Future phylogenetic studies of the intrageneric relationships of the widespread genus *Irwiniella*, and the relationship between *Stenopomyia* and its putative sister genus *Stenosathe* Lyneborg from Africa and Central Asia, might shed more light on the origin of the Madagascar Therevidae.

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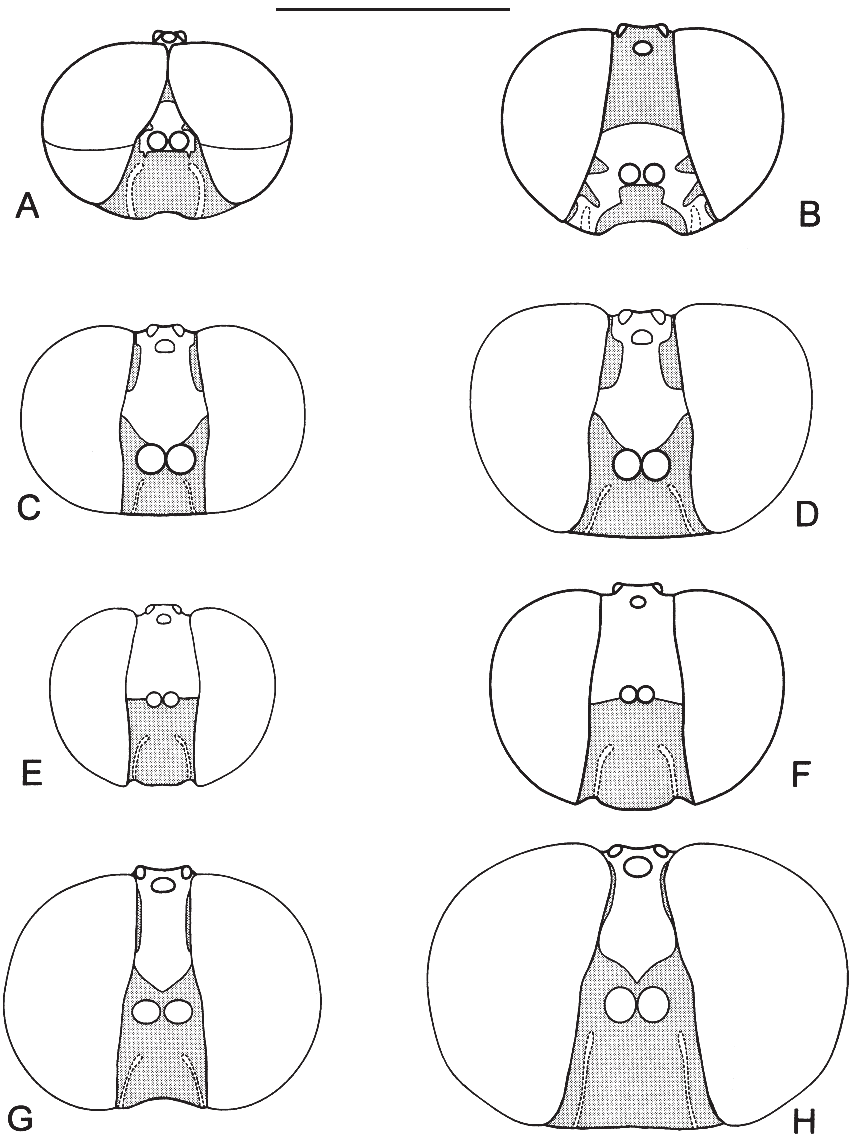

Fig. 1 A–H. Heads frontal; left column males, right column females: (A, B) *Microgephyra chrysothorax* sp. n.; (C, D) *Microgephyra falx* sp. n.; (E, F) *Microgephyra elegans* sp. n.; (G, H) *Microgephyra madagascariensis* sp. n. Scale bar = 1 mm.

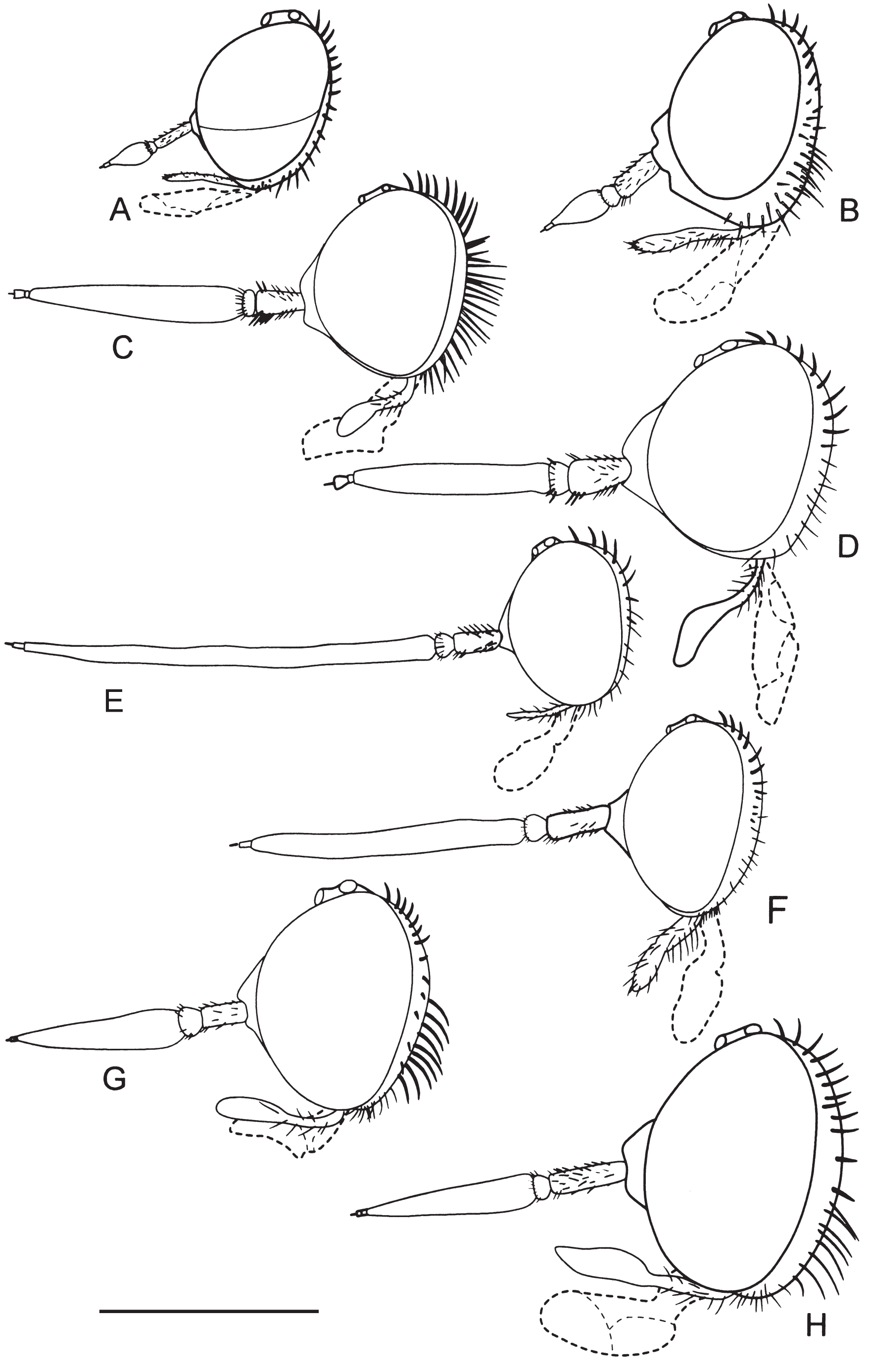

Fig. 2 A–H. Heads lateral; left column males, right column females: (A, B) *Microgephyra chrysothorax* sp. n.; (C, D) *Microgephyra falx* sp. n.; (E, F) *Microgephyra elegans* sp. n.; (G, H) *Microgephyra madagascariensis* sp. n. Scale bar = 1 mm.

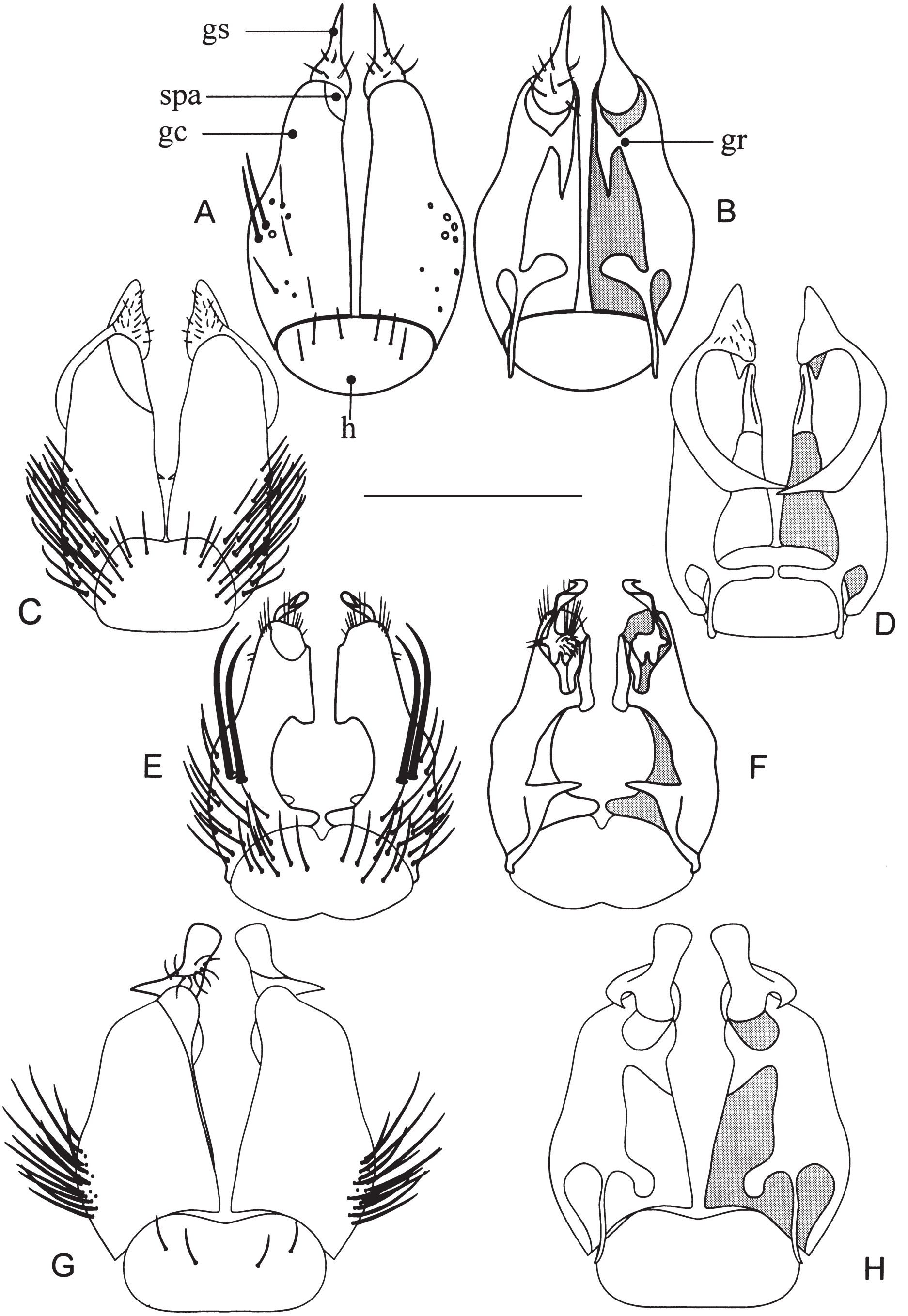

Fig. 3 A–H. Gonocoxites; left column ventral, right column dorsal: (A, B) *Microgephyra chrysothorax* sp. n.; (C, D) *Microgephyra falx* sp. n.; (E, F) *Microgephyra elegans* sp. n.; (G, H) *Microgephyra madagascariensis* sp. n. Abbreviations: gc – gonocoxite, gr – gonocoxal ring, gs – gonostylus, h – hypandrium, spa – spiculose area. Scale bar = 0.5 mm.

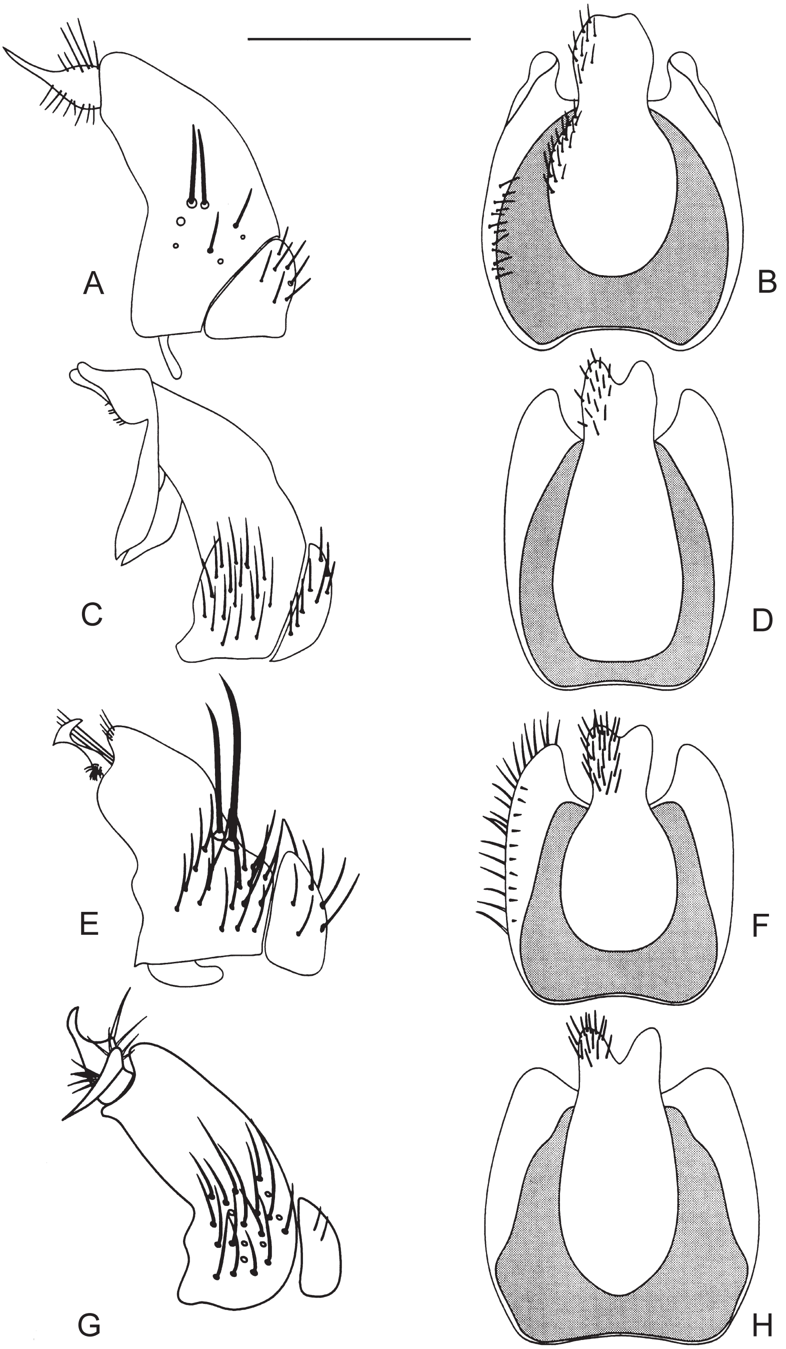

Fig. 4 A–H. Male terminalia; left column gonocoxites (lateral), right column epandria (ventral): (A, B) *Microgephyra chrysothorax* sp. n.; (C, D) *Microgephyra falx* sp. n.; (E, F) *Microgephyra elegans* sp. n.; (G, H) *Microgephyra madagascariensis* sp. n. Scale bar = 0.5 mm.

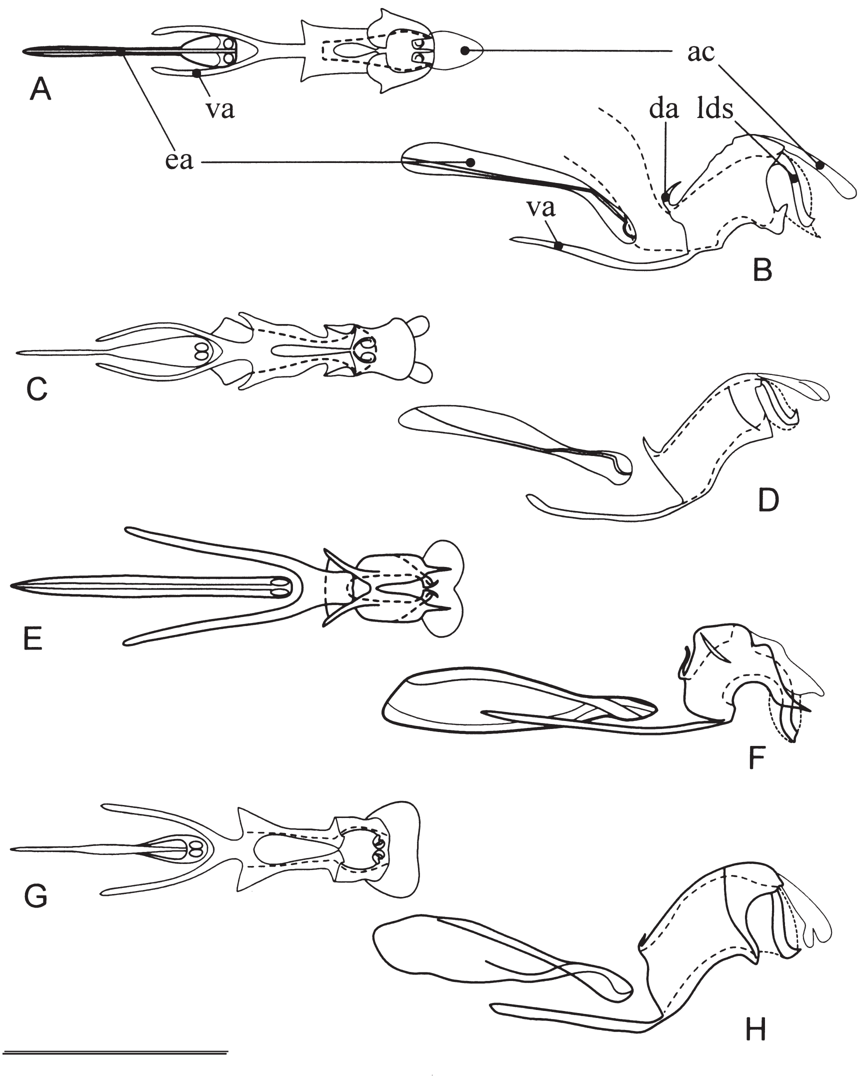

Fig. 5 A–H. Aedeagi; left column ventral, right column lateral: (A, B) *Microgephyra chrysothorax* sp. n.; (C, D) *Microgephyra falx* sp. n.; (E, F) *Microgephyra elegans* sp. n.; (G, H) *Microgephyra madagascariensis* sp. n. Abbreviations: ac – apical cap, da – dorsal apodeme, ea – ejaculatory apodeme, lds – lateral distiphallus sclerite, va – ventral apodeme. Scale bar = 0.5 mm.

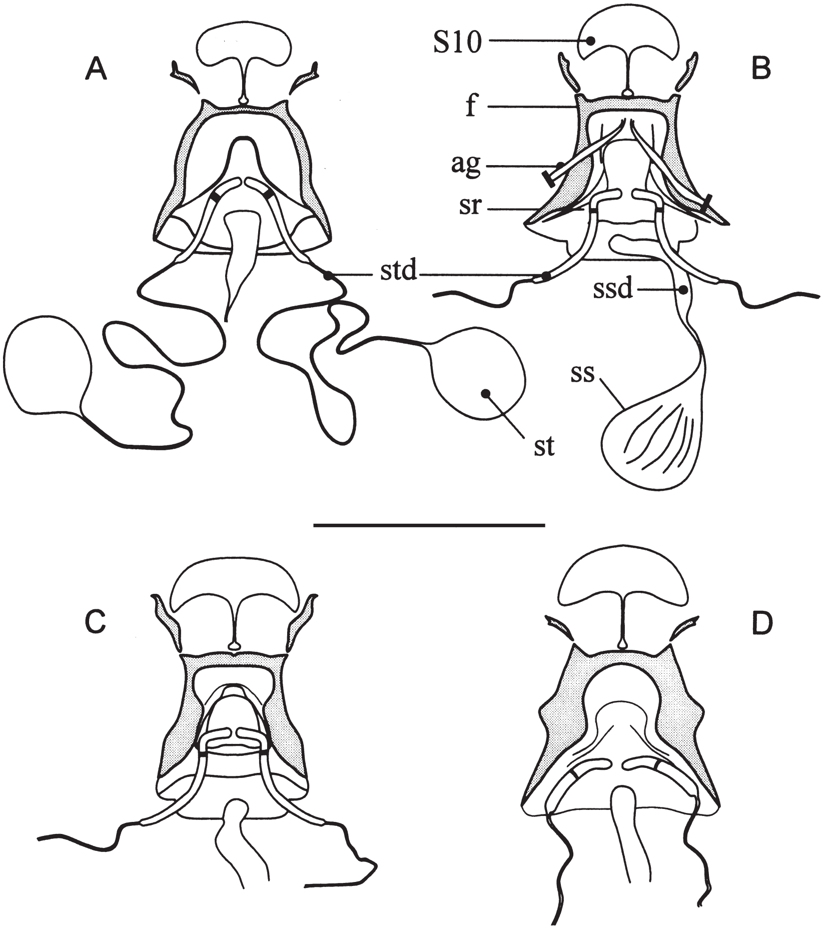

Fig. 6 A–D. Furcae, dorsal view: (A) *Microgephyra chrysothorax* sp. n.; (B) *Microgephyra falx* sp. n.; (C) *Microgephyra elegans* sp. n.; (D) *Microgephyra madagascariensis* sp. n. Abbreviations: ag – accessory gland, f – furca, sr – sclerotized ring, ss – spermathecal sac, ssd – spermathecal sac duct, st – spermatheca, std – spermathecal duct, S10 – sternite 10. Scale bar = 0.5 mm.

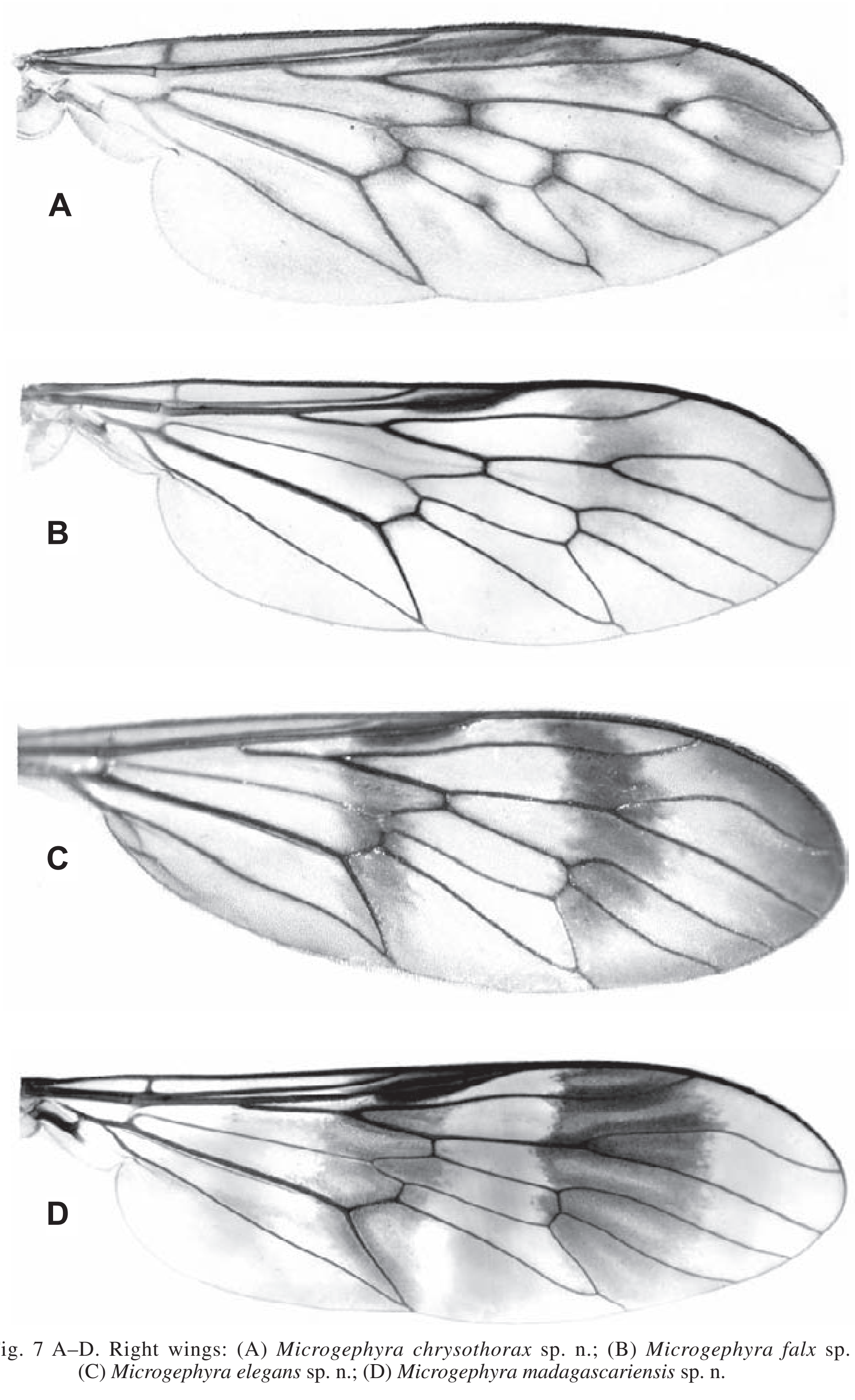

Fig. 7 A–D. Right wings: (A) *Microgephyra chrysothorax* sp. n.; (B) *Microgephyra falx* sp. n.; (C) *Microgephyra elegans* sp. n.; (D) *Microgephyra madagascariensis* sp. n.

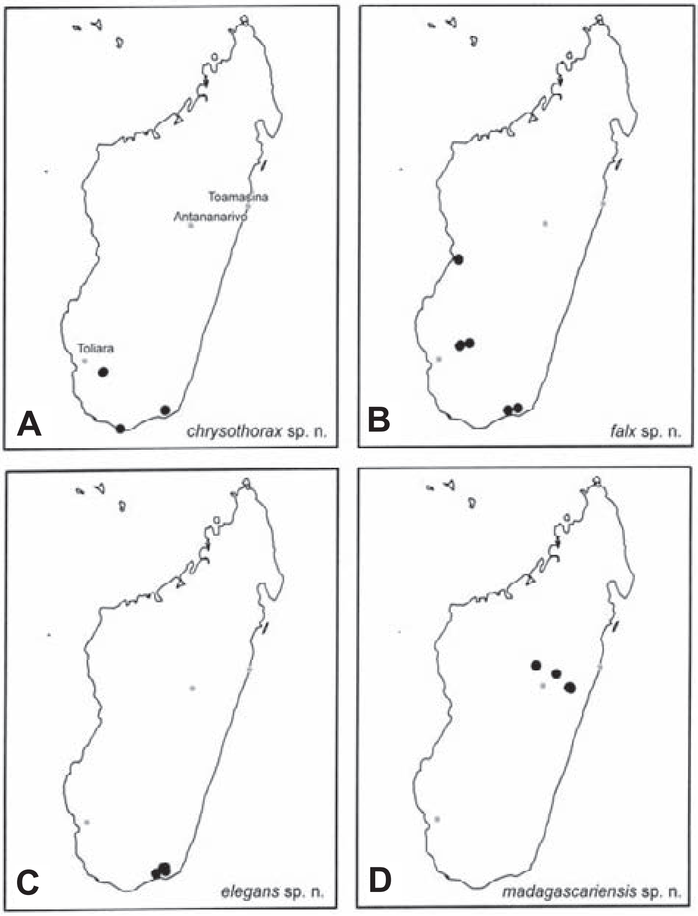

Fig. 8 A–D. Distribution maps: (A) *Microgephyra chrysothorax* sp. n.; (B) *Microgephyra falx* sp. n.; (C) *Microgephyra elegans* sp. n.; (D) *Microgephyra madagascariensis* sp. n.

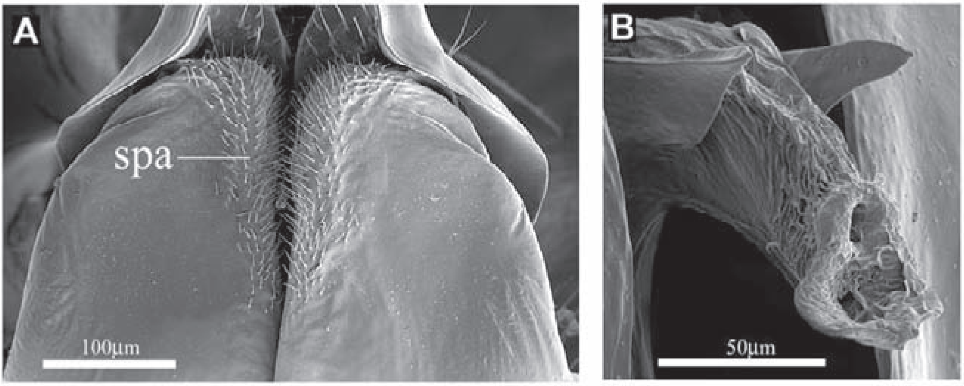

Fig. 9 A, B. SEM images: (A) *Microgephyra falx* sp. n., apical part of gonocoxites with spiculose area (spa). Scale bar = 100 µm. (B) *Microgephyra elegans* sp. n., tip of distiphallus. Scale bar = 50 µm.